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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,203	01/09/2006	Maurizio Castiglioni	2511-1057	5998
466 7590 01/22/2009 YOUNG & THOMPSON 209 Madison Street Suite 500 ALEXANDRIA, VA 22314			EXAMINER ABRAHAM, AM/AD A	
			ART UNIT 1791	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/564,203

**Applicant(s)**

CASTIGLIONI ET AL.

**Examiner**

AMJAD ABRAHAM

**Art Unit**

1791

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 December 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 1-7 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 8-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 January 2006 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-85/86)  
Paper No(s)/Mail Date 01/09/2008
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Election/Restrictions***

1. Applicant's election with traverse of Group II in the reply filed on December 10, 2008 is acknowledged. The traversal is on the ground(s) that the following grounds: (1) the art used by examiner (EP 0813950 B1) in making the lack of unity restriction was stated in applicant's specification and therefore not available for use as prior art; (2) that the International Search Report failed to cite the art used by examiner (EP 0813950 B1); and (3) the International Search Report failed to check the lack of unity box so therefore there must be unity. This is not found persuasive for the following reasons. In regards to applicant's first argument, the piece of prior art used to make *a posteriori* lack of unity rejection need only describe the common technical feature between competing groups of claims. So therefore it is irrelevant if EP 0813950 B1 does not compare to the present invention as long as it compares to the common technical feature. Regarding applicant's second argument, it is immaterial as to whether or not the International Search Report disclosed EP 0813950 B1 as prior art. The International Search Report is not intended to list every reference that is relevant to the claim language. Regarding applicant's third argument, it is immaterial as to whether or not the international search report indicated lack of unity. Furthermore, the international search report did indicate that independent claims 1 (method claims) and 8 (apparatus claims) are inconsistent and it is questionable if they are linked by a single general inventive concept.

**The requirement is still deemed proper and is therefore made FINAL.**

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 8 is rejected under 35 U.S.C. 102(b) as being anticipated by Breitling (German Patent Publication DE 24 18 445 A1—made of record by the applicant).

4. Regarding claim 8, Breitling teaches an apparatus for the manufacture of thermoformed bodies, from a sheet of plastic material (15), comprising:

- a. a thermoforming mold (11) having a sheet shaping surface (12); **(See figure 1, showing a thermoforming mold.)**
- b. a movable sheet clamping frame (14) for holding the sheet (15), said clamping frame (14) peripherally extending around the mold (11), and **(See figure 1, showing a clamping frame (6) which holds a sheet (5). Also see that clamping frame extends around the periphery of the mold.)**
- c. clamping means (23, 26) for gripping the peripheral edges of the sheet (15) along at least part of the sides of the clamping frame (14); **(See page 5 lines 4-6 disclosing that there are clamping means for clamping said sheet to the clamping frame.)**
- d. support means (16) for supporting the clamping frame (14), said support means (16) being positioned and conformed to move the clamping frame (14) between a raised and a lowered position with respect to the mold (11); **(See**

**figure 1, showing support means (8) which supports the clamping frame which can raise and lower the frame with respect to the thermoforming mold. See figure 3, showing the extension of the movable support (8).)**

- e. and in which the clamping frame (14) has a geometrically variable shape providing at least a first and a second frame portion (14A, 14B; 14C, 14D, 14E), movable in relation to each other; **(See figures 2 and 3, disclosing the clamping frame being bent at a hinge (7) to change the shape of the clamping frame. The movable support means (8) move the 1<sup>st</sup> and 2<sup>nd</sup> frame portion to a variable shape. See V shape of clamping frame in figure 3.)**
- f. control means being operatively connected to said movable frame portions (14B; 14D), to selectively vary their disposition in conformity with the shaping surface (12) of the mold (11). **(See page 3 [paragraph 0002] and claim 5 disclosing that there are control means which is connected to the thermoforming system which allows a technician to alter the movable frame elements via a hydraulic ram.)**

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 8-10, 12, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Petersen (USP No. 6,361,304) in view of Kotha et al. (USP No. 6,063,326).

8. Regarding claim 1, Petersen teaches an apparatus for the manufacture of thermoformed bodies, from a sheet of plastic material (15),

g. comprising:

i. a thermoforming mold (11) having a sheet shaping surface (12);

**(See abstract and figure 1 disclosing (20) a thermo-forming machine with a shaping surface (26 and 32) which shapes the plastic work piece by way of a thermoforming operation.)**

ii. a movable sheet clamping frame (14) for holding the sheet (15), said clamping frame (14) peripherally extending around the mold (11), and  
**(See abstract disclosing that the adjustable clamp frame has clamping members that extends around the mold. See Figure 1 showing a thermoforming machine (20) that has a movable clamping frame (42) which extends around the molds (26 and 32).)**

- iii. clamping means (23, 26) for gripping the peripheral edges of the sheet (15) along at least part of the sides of the clamping frame (14); (See abstract disclosing the use of clamping members which secure the workpiece (plastic sheet) by clamping the edges of the workpiece. See figure 2 which shows part numbers (58 and 62) which act as clamping means to hold edges of a workpiece.)
- iv. and in which the clamping frame (14) has a geometrically variable shape providing at least a first and a second frame portion (14A, 14B; 14C, 14D, 14E), movable in relation to each other; (See abstract disclosing that the adjustable clamp frame has longitudinal and traverse cross members which are adjustable along a continuum towards and away from one another.)
- v. control means being operatively connected to said movable frame portions (14B; 14D), to selectively vary their disposition in conformity with the shaping surface (12) of the mold (11). (See column 7 lines 15-27 disclosing actuators which may be pneumatically or hydraulically operated to move the adjustable clamp frame. See column 10 lines 58-67 disclosing that the adjustable clamp frame (42) is electronically controlled. Control is done by storing the relative positions of the cross members of the adjustable frame in the memory of a microprocessor to change the size of the workpiece (plastic sheet).)
- h. Petersen does not teach

- vi. support means (16) for supporting the clamping frame (14), said support means (16) being positioned and conformed to move the clamping frame (14) between a raised and a lowered position with respect to the mold (11).
- i. However, Kotha teaches
  - vii. support means (16) for supporting the clamping frame (14), said support means (16) being positioned and conformed to move the clamping frame (14) between a raised and a lowered position with respect to the mold (11); **(See figures 1-6 showing lifters (30) which support the clamp frame (12) and moves the clamp frame to a raised and lowered position with respect to the forming mold.)**
- j. Petersen and Kotha are analogous art because they are from the same field of endeavor which is making clamping frames of a thermoforming machine movable. At the time of the invention, it would have been obvious to one having the ordinary skill in the art, having the teachings of Petersen and Kotha before him or her, to modify the teachings of Petersen to include the teachings of Kotha for the benefit of eliminating cold-flow lines (See column 1 lines 32-44 in Kotha). Cold flow lines occur when portions of the hot pliable film touch the cooler mold surface before other parts of the hot pliable firm touch the mold. Kotha solves this problem by advancing the clamping frame to a position which would allow the hot pliable film to contact the entire mold at the same time. Therefore, it would have been obvious to combine Petersen with Kotha to utilize a support means that



would allow the clamping frame to be raised or lowered so that full contact can occur in the thermoforming system.

9. Regarding claim 9, Petersen teaches that the variable geometry clamping frame (14) comprises clamping means (23, 26) for gripping the plastic sheet (15) along at least part of the peripheral edges. **(See abstract disclosing the use of clamping members which secure the workpiece (plastic sheet) by clamping the edges of the workpiece. See figure 2 which shows part numbers (58 and 62) which act as clamping means to hold edges of a workpiece.)**

10. Regarding claim 10, Petersen teaches that the clamping means (23) for gripping the plastic sheet (15), are of mechanical type. **(See figure 6 showing clamping member (58) which is a mechanical clamp. The clamping member includes a clamp (140), a lower clamp member (142), an upper clamp member 144 and an actuator that applies clamping pressure.)**

11. Regarding claim 12, Petersen does not explicitly teach wherein the variable geometry frame (14) for holding the plastic sheet (15), comprises slidable and/or pivotally connected frame portions (14A, 14B; 14C, 14D, 14E) disposable on a same plane.

k. However, Kotha teaches wherein the variable geometry frame (14) for holding the plastic sheet (15), comprises slidable and/or pivotally connected frame portions (14A, 14B; 14C, 14D, 14E) disposable on a same plane. **(See hinges (16) in figures 1-6 which allow frame portions to pivot and fit around a mold.)**

- l. Petersen and Kotha are analogous art because they are from the same field of endeavor which is making clamping frames of a thermoforming machine movable. At the time of the invention, it would have been obvious to one having the ordinary skill in the art, having the teachings of Petersen and Kotha before him or her, to modify the teachings of Petersen to include the teachings of Kotha for the benefit of eliminating cold-flow lines (See column 1 lines 32-44 in Kotha). Cold flow lines occur when portions of the hot pliable film touch the cooler mold surface before other parts of the hot pliable firm touch the mold. Kotha solves this problem by advancing the clamping frame to a position which would allow the hot pliable film to contact the entire mold at the same time. Therefore, it would have been obvious to combine Petersen with Kotha to utilize a support means that would allow the clamping frame to be raised or lowered so that full contact can occur in the thermoforming system.
12. Regarding claim 15, Petersen does not explicitly teach wherein the variable geometry clamping frame conforms to the geometrical pattern of the peripheral edges of the mold (11).
- m. However, Kotha teaches wherein the variable geometry clamping frame conforms to the geometrical pattern of the peripheral edges of the mold (11).  
**(See figures 1-6 showing how the clamping frame is manipulated to conform to the pattern of the thermoforming mold.)**
- n. Petersen and Kotha are analogous art because they are from the same field of endeavor which is making clamping frames of a thermoforming machine

movable. At the time of the invention, it would have been obvious to one having the ordinary skill in the art, having the teachings of Petersen and Kotha before him or her, to modify the teachings of Petersen to include the teachings of Kotha for the benefit of eliminating cold-flow lines (See column 1 lines 32-44 in Kotha). Cold flow lines occur when portions of the hot pliable film touch the cooler mold surface before other parts of the hot pliable firm touch the mold. Kotha solves this problem by advancing the clamping frame to a position which would allow the hot pliable film to contact the entire mold at the same time. Therefore, it would have been obvious to combine Petersen with Kotha to utilize a support means that would allow the clamping frame to be raised or lowered so that full contact can occur in the thermoforming system.

13. Claims 11 and 13-14 and are rejected under 35 U.S.C. 103(a) as being unpatentable over Petersen (USP No. 6,361,304) in view of Kotha et al. (USP No. 6,063,326) in further view of Vaughn (International Published Application WO 99/64221—made of record by the applicant).

14. Regarding claim 11, the combination of Petersen and Kotha does not teach wherein the clamping means (26) for gripping the plastic sheet (15) are of vacuum operated type.

o. However, Vaughn teaches wherein the clamping means (26) for gripping the plastic sheet (15) are of vacuum operated type. **(See page 4 paragraph [0002] disclosing that the sheet support member (11) holds the sheet at the sheet's edge using a vacuum seal. See figure 6)**

- p. The use of a vacuum seal is a well known practice in the art of clamping a sheet in a thermoforming process. Use of a vacuum operated clamping means is a mere choice out of several possibilities including hinged clamps, locked clamps, manually operated clamps, automatically operated clamps, and fasteners. It would have been obvious to one having the ordinary skill in the art to try a vacuum operated gripper since this is merely a determination of design preference.
15. Regarding claim 13, the combination of Petersen and Kotha does not teach wherein said vacuum-operated clamping means comprise at least one top open slot (27) along a front side of the clamping frame (14), said slot (27) being connected to a manifold (29) by a plurality of air suction holes (30).
- q. However, Vaughn teaches wherein said vacuum-operated clamping means comprise at least one top open slot (27) along a front side of the clamping frame (14), said slot (27) being connected to a manifold (29) by a plurality of air suction holes (30). (See page 8 (paragraphs 1-3) disclosing the use of vacuum operated clamping means which have an open slot (part number 49) which is connected to a vacuum source (manifold) by way of a hose (47). Vaughn further teaches that multiple tubes can be used. It is well known in the art of utilizing a vacuum operated suction means to clamp a sheet to utilize a plurality of suction holes to ensure the strongest bond to prevent any shifting or displacement of the sheet during a thermoforming operation.)

16. Regarding claim 14, the combination of Petersen and Kotha does not teach wherein the variable geometry clamping frame (14) has peripheral edges provided with longitudinal slots (27) connectable to an air suction source.

r. However, Vaughn teaches wherein the variable geometry clamping frame (14) has peripheral edges provided with longitudinal slots (27) connectable to an air suction source. **(See page 8 (paragraphs 1-3) disclosing the use of vacuum operated clamping means which have an open slot (part number 49) which is connected to a vacuum source (47))**

s. It would have been obvious to one having the ordinary skill in the art to utilize slots or openings on the frame as an avenue for the suction/vacuum means to attach to the sheet.

17. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Petersen (USP No. 6,361,304) in view of Kotha et al. (USP No. 6,063,326) in further view of Vaughn (International Published Application WO 99/64221—made of record by the applicant) in further view of Jenkins (USP No. 5,529,472) in further view of Grolla (German Patent Application DE 2630021 B—made of record by the applicant).

18. Regarding claim 16, the combination of Petersen, Kotha, and Vaughn does not teach wherein the variable geometry clamping frame (14) comprises a first and a second top-open suction slots parallely extending along opposite sides, and in that a bar (31) having a smaller width than the slots (27) is provided slightly spaced apart and above the bottom wall of each slot, said bar (31) defining together with said bottom wall a narrow air flow passage communicating with said air suction holes (30).

t. Furthermore, Jenkins does not explicitly teach wherein the variable geometry clamping frame (14) comprises a first and a second top-open suction slots parallely extending along opposite sides, and in that a bar (31) having a smaller width than the slots (27) is provided slightly spaced apart and above the bottom wall of each slot, said bar (31) defining together with said bottom wall a narrow air flow passage communicating with said air suction holes (30).

However, it would have been obvious to one having the ordinary skill in the art to include a bar (31) having a smaller width than the slots in order to alter the air suction characteristics of the suction slots. The venturi effect is a well known scientific principle that teaches that if fluid flow is constricted (like placing a bar in the path of an air suction device) the velocity of the fluid will increase. This venturi effect will lead to increased suction in the clamping system. For example, Jenkins discloses the use of a dump valve (# 42 in figure 2 which is situated between the air suction means (46 – vacuum pump) and the holes for sucking the sheet (25). Clearly, increased suction would also happen if the valve position was set to a closed position.)

u. The combination of Petersen, Kotha, Vaughn, and Jenkins still does not disclose wherein the clamping frame has two open suction slots.

v. However, Grolla teaches wherein the clamping frame has two open suction slots. (See figure 2- parts (9) and (10))

viii. Grolla's use of multiple slots would have been obvious to one having the ordinary skill in the art because additional slots would allow the thermoplastic sheet to be clamped onto a frame at multiple positions at multiple suction points.

### ***Conclusion***

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The reference Shuman (USP No. 4,097,035) which discloses a clamping fame to be used in a thermoforming operation. The reference MacLachlan (USP No. 4,975,236) which discloses a method for pre-shaping and vacuum molding a thermoplastic sheet. .

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMJAD ABRAHAM whose telephone number is (571)270-7058. The examiner can normally be reached on Monday through Friday 8:00 AM to 5:00 PM Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Phillip Tucker can be reached on (571) 272-1095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AAA

/Philip C Tucker/

Supervisory Patent Examiner, Art Unit 1791